

ABSTRACT OF THE DISCLOSURE

The present invention refers to a field emitter beam source (10) comprising at least one emitter (11); at least one extracting electrode (19) to extract a beam current (I_E) from the emitter (11); a current source (12) for providing a predetermined beam current (I_{E0}); a first voltage source (13) for providing a first voltage (U_A) between the emitter (11) and the extracting electrode (19) to switch on the beam current (I_E); and a first switch (S_1) for disconnecting the first voltage source (13). With such a field emitter beam source, the emitter voltage (U_E) necessary to emit a predetermined beam current (I_{E0}) can be determined. This in turn enables the field emitter beam source (10) to generate beam current pulses with a fast rise time and a well defined beam current pulse charge Q .